Organization of African Unity

Scientific, Technical and Research Commission

SEMI-ARID FOOD GRAIN RESEARCH AND DEVELOPMENT

SAFGRAD

Report of Activities

1981 - 1986

(For the Seventh Meeting of the OAU

Scientific Council for Africa, 21-26 April

Nairobi, Kenya)

INTRODUCTION

The African food production problem has been especially acute in the semi-arid regions, a belt of arable land 300 to 900 Km wide, stretching from the Atlantic to the east coast of Africa and extending down the coast from the Ethiopian lowlands to Southern Africa. Although these are areas of generally poor soils and harsh climates, their production potentials have not yet been fully realized.

Annual food production rate in the semi-arid regions, as in most of Africa, has continued to fall far below the rate of population growth, resulting in food imports which now account for more than 20 per cent of total imports. It is in this zone that lies most of the LDCs to which most of the world's attention has been focussed during the last extended drought periods. Thus the world community especially the OAU has a formidable task to overcome in order to assist its inhabitants to attain food self-sufficiency by the year 2000.

The poor performance of agriculture in the semi-arid regions of Africa during the last two decades has been attributed to a variety of factors, the most important of which is the lack of technologies appropriate to the resources and environments of the local farmers. Rainfall, particularly its distribution, is a major constraint in food production in the region. Average total precipitation ranges from 300 mm in the driest areas to 1100 mm in some of the wet areas. Throughout the area, there are wide seasonal fluctuations as well

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as great variations in the intensity of individual rains and in intervals between rains. This might lead to crop failure even during years when total annual rainfall appeared favourable.

Rising population pressures have resulted in the abandonment of the traditional system of shifting cultivation which concentrates cultivation on better land for a system of continuous cultivation and expansion onto shallower and less fertile areas. The results are rapid degradation of soils and declining yields in many areas of high population pressure. The development and transfer of food production technologies to cope with these problems are hampered by weak national research and extension systems in most countries of the region.

HISTORICAL BACKGROUND AND GENERAL INFORMATION

In 1969, the Scientific, Technical and Research Commission of the Organization of African Unity (OAU/STRC) and the United States Agency for International Development (USAID) undertook a joint project for coordinated research, testing and multiplication for 3 major cereals food crops (maize, sorghum and millet) in West Africa. This project, "Major Cereals Research Joint Project 26", was based at the Institute of Agricultural Research of Ahmadu Bello University in Nigeria.

Based on the success of J.P.26 and the recognition that continued research and field testing of crop varieties were needed, the proposal for launching the Semi-Arid Food Grain Research and Development (SAFGRAD) as Joint Project 31, was made by representatives of several African countries, donors and the International Agricultural Research Centres (IARCs).

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Location and Goals

SAFGRAD is a regional research programme which is implemented by the Coordination Office of OAU/STRC. The Coordination Office is located in Ouagadougou, Burkina Faso. In collaboration with national and other regional organizations, SAFGRAD is expected to develop self-sustaining, indigenously supported cooperation in regional agricultural research which will help to increase the quantity and quality of food grains for the growing population of the semi-arid regions of Africa.

Membership of SAFGRAD

Started in 1977, SAFGRAD was organized in cooperation with 18 member states of OAU; namely, the People's Republic of Benin, Cameroon, Cape Verde, Central African Republic, Chad, Ethiopia, The Gambia, Ghana, Guinea, IvoryCoast, Mali, Mauritania, Niger, Nigeria, Senegal, Sudan, Togo and Burkina Faso. As the project activities increased, more countries became interested and the current membership is now 26, with the addition of Botswana, Guinea-Bissau; Kenya; Sierra Leone, Somalia, Tanzania, Zambia and Uganda; through the recommendations of the OAU Council of Ministers.

Objectives of SAFGRAD

The major objectives of SAFGRAD include the following :

Improve sorghum, maize, cowpeas and groundnuts and develop cultural practices to maximize yields under semi-arid farming systems of the sub-Saharan region of Africa;

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Coordinate regional research networks among member states. SAFGRAD collaborative research with the two IARCs - IITA and ICRISAT - serves as a backstop for generating technologies relevant to small farming conditions;

Promote exchange of improved plant materials and technical information among member states through regional testing, workshops and monitoring tours;

Strengthen national agricultural research and programmes through short- and long-term training, seminars and research inputs. Special attention is also given to enhancing the indigenous research capabilities of member states;

Promote the diffusion and transfer of on-farm adaptive technology through its Accelerated Crop Production Officers (ACPO) programme which improves institutional functional linkages between agricultural research and extension within the national programmes of member states;

Support national programmes in developing appropriate farming systems research (FSR) including soil fertility improvement and water-soil management to rebuild the declining resource base for productive agriculture.

Scientific and technical assistance to SAFGRAD was to be provided by IITA for maize and cowpea improvement and by ICRISAT for millet, sorghum and groundnuts. Purdue University in the United States of America was to provide similar assistance but in farming systems research (FSR).

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Management of SAFGRAD

Management of SAFGRAD is effected through the OAU/STRC Coordination Office in Ouagadougou which receives and implements recommendations from the Consultative Committee (CC), the Technical Advisory Committee (TAC) or any other committee decided by the CC.

Functions of CC

1. To identify, review and make recommendations on matters of policy;
2. To review management, organizational or technical problems and make recommendations to donors, implementors, agencies and participating co-operating countries towards the solution of agricultural problems;
3. To facilitate project implementation and assure sound administrative management and technical practices; and
4. To serve as a receiving and reviewing body for questions or suggestions from any participant or co-operative bodies;
5. Membership : The Executive Secretary of OAU/STRC (Chairman), the International Coordinator (Secretary), four members representing Member States, and one representative each from USAID, IFAD, FAC, IITA and ICRISAT. CILSS and Purdue University are represented by observers.

Functions of the TAC

1. To review annual research workplans and submit recommendations to the CC;

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2. To review other research workplans/documentation related to SAFGRAD in the region, and submit recommendations to the CC on approaches for improvement and co-ordination in food crop research;
3. To review annual ACPO workplans and submit recommendations to CC, national agricultural officers and ACPOs; and
4. Review Farming Systems Research (FSR) results and advise the CC, on co-ordination and other approaches to FSR.
5. Membership includes : The Executive Secretary of OAU/STRC or his representative, four representatives from African Member countries and one from each of the following organizations : USAID, ICRISAT, IITA, INSAH, FAC and Purdue University, SAFGRAD International Coordinator and the Director of Research as Secretary.

Funding of SAFGRAD

SAFGRAD has continued to benefit from the financial and technical support of its multi-national donors, namely :

- The United States Agency for International Development (USAID); from the U.S.A.
- The International Fund for Agricultural Development (IFAD); Rome.
- The FONDS d'Aide et de Cooperation (FAC) from France.

Unfortunately, there are other important components of the SAFGRAD programme which cannot be funded by the above donors. Arrangements are currently in progress to look for additional sources of funding.

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SOME MAJOR SAFGRAD ACTIVITIES (1981 - 1986)

With the increase of new staff between 1983 and 1985, the intensify and number of SAFGRAD activities have increased. From some of the feedback received, there is presently a greater SAFGRAD impact in the member countries than it was before.

Consultative and Technical Advisory Committe Meetings

During the above period, the SAFGRAD Coordination Office organized four CC and three TAC meetings. The meetings of the two committes resulted in recommendations for implementation by the Coordination Office.

The Accelerated Crop Production Officers' (ACPO) Programme

Despite the high yields and other good results often cited by many agricultural research stations, the poor transfer of new technologies to farmers has still continued to be one of the major constraints in increasing food production in many African countries. In an attempt to improve the situation, SAFGRAD assigned one officer to each of five countries to strengthen the linkages between national research and extension. Each Accelerated Crop Production Officer (ACPO) tests new varieties and technologies from SAFGRAD regional stations and the national programme of a given country directly on farmers' farms in that country. Where a new variety or technology is tested and accepted by one farmer, its adoption by neighbouring farmers has been without much difficulty. Once accepted, the new technology can thus be taken over by the extension service fcr delivery to other farmers. Through such on-farm testing, the ACPO

obtains feedback from the farmer to the national and SAFGRAD scientists. The evolution of the programme has been found to differ from one country to another due to the different levels of national research and extension systems, capabilities and priorities.

The ACPO programme has been one of the most successful activities of SAFGRAD. Numerous requests have been made to have the programme expanded into their countries which presently do not have ACPOs. During the period under review, ACPO programmes were established in Burkina Faso, Cameroon, Mali, Senegal and Togo.

Farming Systems Research (FSR) Programme

With the phasing out of the Farming Systems Unit (FSU) which was being implemented by Purdue University, this important component of SAFGRAD activities has been fully replaced by an FSR programme funded by the International Fund for Agricultural Development (IFAD) in Rome, Italy. The primary goal of the FSR programme is to identify technologies appropriate for the largely subsistence peasant farmers and smallholders of the semi-arid zone of Africa. The programme focuses on evaluating and compiling technologies which maximize the use of non-purchased inputs while continuing to practise minimal application of purchased inputs.

SAFGRAD's new approach is to strengthen existing individual national FSR programmes by identifying and

filling vital gaps within such programmes. Presently SAFGRAD is involved in FSR in the following countries :

Burkina Faso - A Soil Scientist, an Agricultural Economist and an Animal Production Specialist have been supplied by SAFGRAD to work within the national FSR programme.

Benin - An Agronomist is currently based in INA Station with the national FSR team. Arrangements are in progress to add an Agricultural Economist to the team.

Cameroon - A SAFGRAD Soil Scientist and an Agricultural Economist have recently assumed duty in Maroua to assist the national FSR team in the semi-arid northern part of Cameroon.

The FSR programme is managed by a programme management committee which meets periodically to review the activities of the programme.

Arrangements are in progress between OAU/STRC and ICRAFT for one agroforestry specialist to be added to each of the above national FSR programmes. Thus the role of trees in restoring soil fertility and contriolling soil erosion can be fully integrated into the FSR programme.

Plan to set up network of FSR consumer (Africa) of research results
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TRAINING

In order to strengthen the indigenous capabilities of national programmes of its member states, training has been one of the major activities of SAFGRAD. Its training programme includes on-the-job training, short non-degree as well as formal, academic degree training.

Short-term training usually lasts from a few weeks to a few months for laboratory skills or for one cropping season for crop production and other field skills. Such training is often carried out by SAFGRAD Scientists at its regional station in Kamboinse, Burkina Faso or by the cooperating institutes : IITA at Ibadan, Nigeria or ICRISAT at Hyderabad, India. With the inauguration of the new ICRISAT Shel Centre near Niamey, Niger, some of the short-term training will take place there.

Long-term training involves the acquisition of higher University qualifications - Masters and Doctorate degrees or their equivalents. Candidates for such training have often been trained in African or overseas universities. Although most of the beneficiaries of such training usually return to their countries, a few of them have preferred to stay abroad.

The acceptance of candidates from SAFGRAD member countries for training is done through the recommendation of the host government. The training is accomplished through funds made available directly to SAFGRAD or to the training institution by the donor on behalf of SAFGRAD. While in training, SAFGRAD

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endeavours to keep in touch with the candidate to ensure that his training is relevant to the current needs of his country.

SUMMARY OF MAJOR ACHIEVEMENTS

Although SAFGRAD has been in existence for less than 10 years, it has succeeded in attaining some achievements which include the following :

SAFGRAD's research collaboration with the International Agricultural Research Centres (IARCs) - ICRISAT and IITA - together with its function of linking regional research to the national research programmes of its member countries, has provided a unique mechanism for generating appropriate crop production technologies in the semi-arid regions of Africa.

Research focus of the SAFGRAD/IITA programme was directed to the development of varieties that are tolerant/resistant to striga, drought, insects and disease and are extra early-maturing, while performing well under low levels of soil fertility. Many of such varieties are now being tested by national programmes of SAFGRAD member states.

Monitoring tours have been organized annually by the SAFGRAD/IITA team. These tours have become a critical element in the regional programme of SAFGRAD. During the tours, scientists from 4-5 national programmes and IITA have the opportunity to visit regional variety, on-farm and other trials in selected member countries, comparing the performance of their respective varieties and technologies with those of their colleagues and learning to make better judgements in their own national research improvement programmes.

More than 1000 lines of sorghum of tropical origin were selected and evaluated at different trial sites by the SAFGRAD/ICRISAT team in Samaru, Nigeria and several promising lines were identified and utilized to improve local varieties in many SAFGRAD member countries. In the sorghum and millet programme initiated

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in East and Southern Africa in 1982, several lines of elite sorghum germplasm have been developed for the national agricultural research programmes of that sub-region. Good research cooperation has been established among the participating countries involved.

The ACPO programme has been a major approach of SAFGRAD in developing links between national agricultural research and extension systems. Pre-extension testing has provided a basis for developing valid extension themes and obtaining feedback to researchers on farmer acceptance and/or constraints to adoption. It is expected that the ACPO programme would be established in many of the participating countries which, so far, have not benefited from the programme.

A major SAFGRAD achievement has been the development of a simple ridge-tyer which can be utilized when making ridges by animal traction. Tied ridges help to reduce rainfall run-off, soil erosion and moisture stress, thereby increasing crop yields. This device, which has now been tested for two years, has been found to reduce the 27 man days per hectare (required to produce hand-made tied ridges) to less than 12 man days/hectare. It may constitute a break-through in peasant agriculture in the 600-900 mm rainfall zone of many African countries where the SAFGRAD programme is being implemented. Its cost of about (US $50.00) is within reach of many peasant farmers.

SAFGRAD has succeeded in training in collaboration with other institutions, more than 30 African scientists at higher degree levels on various fields and aspects of food grain research and production. For short-term training lasting for not more than six months, more than 100 Africans had participated in many

courses ranging from laboratory methodologies to various aspects of field training.

The farming systems research (FSR) programme has been involved in Benin, Burkina Faso and Cameroon where SAFGRAD scientists are providing vital support to national FSR programmes of the three countries. The focus has been on evaluating technologies which maximize the use of non-purchased inputs while continuing to practise minimal applications of purchased inputs.

During the last five years, SAFGRAD has successfully promoted a regional network of food grain research involving its member countries through several workshops which were attended by more than 750 leading African and other international crop scientists who now have a better opportunity to exchange valuable ideas and information on problems of common interest.

The achievements of SAFGRAD have been possible through the OAU umbrella which enables SAFGRAD to operate in all its 26 member countries. This has been a great asset to SAFGRAD's main function of research coordination.

SAFGRAD INTERNATIONAL ADMINISTRATIVE AND SCIENTIFIC STAFF*

	Position	Name	Cooperator	Donor	Location	Remarks
1.	International Coordinator	J.M. MENYONGA	OAU/STRC	USAID	OUAGADOUGOU	COORDINATION OFFICE
2.	Director of Research	TAYE BEZUNEH	OAU/STRC	IFAD	OUAGADOUGOU	COORDINATION OFFICE
3.	Financial Controller	E.A. ODONKOR	OAU/STRC	IFAD	OUAGADOUGOU	COORDINATION OFFICE
4.	Accountant	E.A. ADANLETE	OAU/STRC	USAID	OUAGADOUGOU	COORDINATION OFFICE
5.	Admin. Assistant	M.A. BRIGGS	OAU/STRC	IFAD	OUAGADOUGOU	COORDINATION OFFICE
6.	Project Manager	A. FLEMING	PASA	USAID	OUAGADOUGOU	COORDINATION OFFICE
7.	Maize Agron.(Team Leader)	M. RODRIGUEZ	IITA	USAID	KAMBOINSE	
8.	Cowpea Agronomist	N. MULEBA	IITA	USAID	KAMBOINSE	
9.	Cowpea Breeder	V.D.AGGARWAL	IITA	IDRC	KAMBOINSE	Works with SAFGRAD/IITA team
10.	Maize Breeder	A.O. DIALLO	CIMMYT/IITA	USAID	KAMBOINSE	
11.	Maize/Cowpea Entomologist	J.B. SUH	IITA	USAID	KAMBOINSE	
12.	Soil & Water Mgmnt.Agron.	N. HULUGALLE	IITA	USAID	KAMBOINSE	
13.	Sorgh./Millet Coordntr.	B. GEBREKIDAN	ICRISAT	USAID	NAIROBI	For East & S. Africa
14.	Sorghum Breeder	D.S. MURTY	ICRISAT	USAID	KAMBOINSE	
15.	Soil Scientist	TADESSE KIBREAB	BURKINA FASO	IFAD	KAMBOINSE	Farming Systems Res.
16.	Agricultural Economist	COFFI Y.PRUDENCIO	BURKINA FASO	IFAD	KAMBOINSE	Farming Systems Res.

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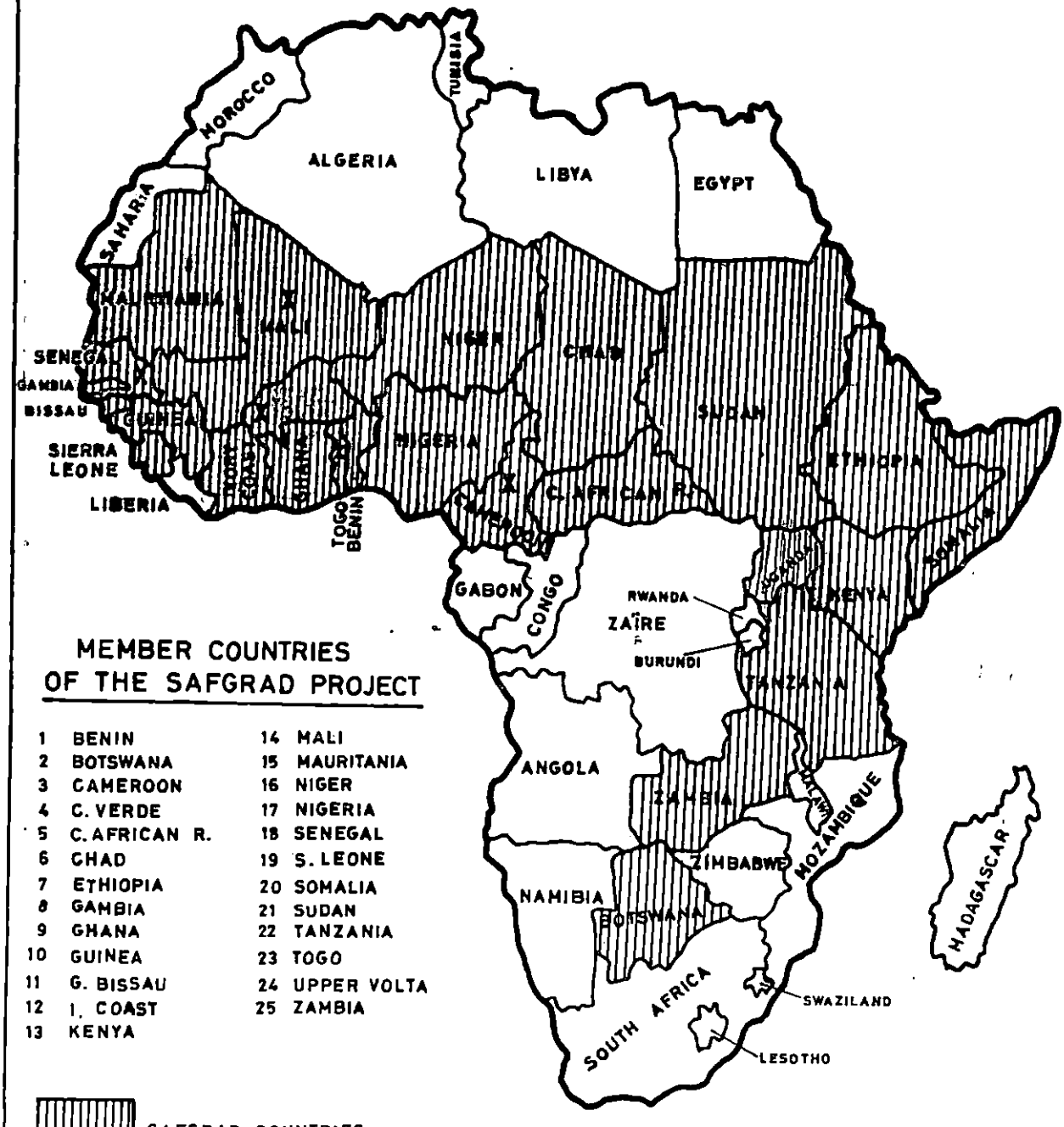
* As at 31 March, 1986.

	Position	Name	Cooperator	Donor	Location	Remarks
17.	Animal Prod.Specialist	KASSU YILALA	BURKINA FASO	IFAD	KAMBOINSE	Farming Systems Res.
18.	Agronomist	B.J. NDUNGURU	BENIN	IFAD	INA	Farming Systems Res.
19.	Soil Scientist	L. SINGH	CAMEROON	IFAD	GAROUA	Farming Systems Res.
20.	Agricultural Economist	D.S. NGAMBEKI	CAMEROON	IFAD	GAROUA	Farming Systems Res.
21.	Accelerated Crop Production Officers (ACPOs)	J.J. JOHNSON	CAMEROON	USAID	MAROUA	SAFGRAD-funded programme. Salaries of national staff are paid by the host country.
22.		H. RENAUD	TOGO	FAC	KARA	
23.		LAMIN TRAORE	MALI	USAID	SOTUBA	
24.		MOUSSA KABORE	BURKINA FASO	USAID	KAMBOINSE	
25.		TOKY PAYARO**	TOGO	FAC	KARA	

** National counterpart ACPO.

MAP OF AFRICA



MEMBER COUNTRIES OF THE SAFGRAD PROJECT

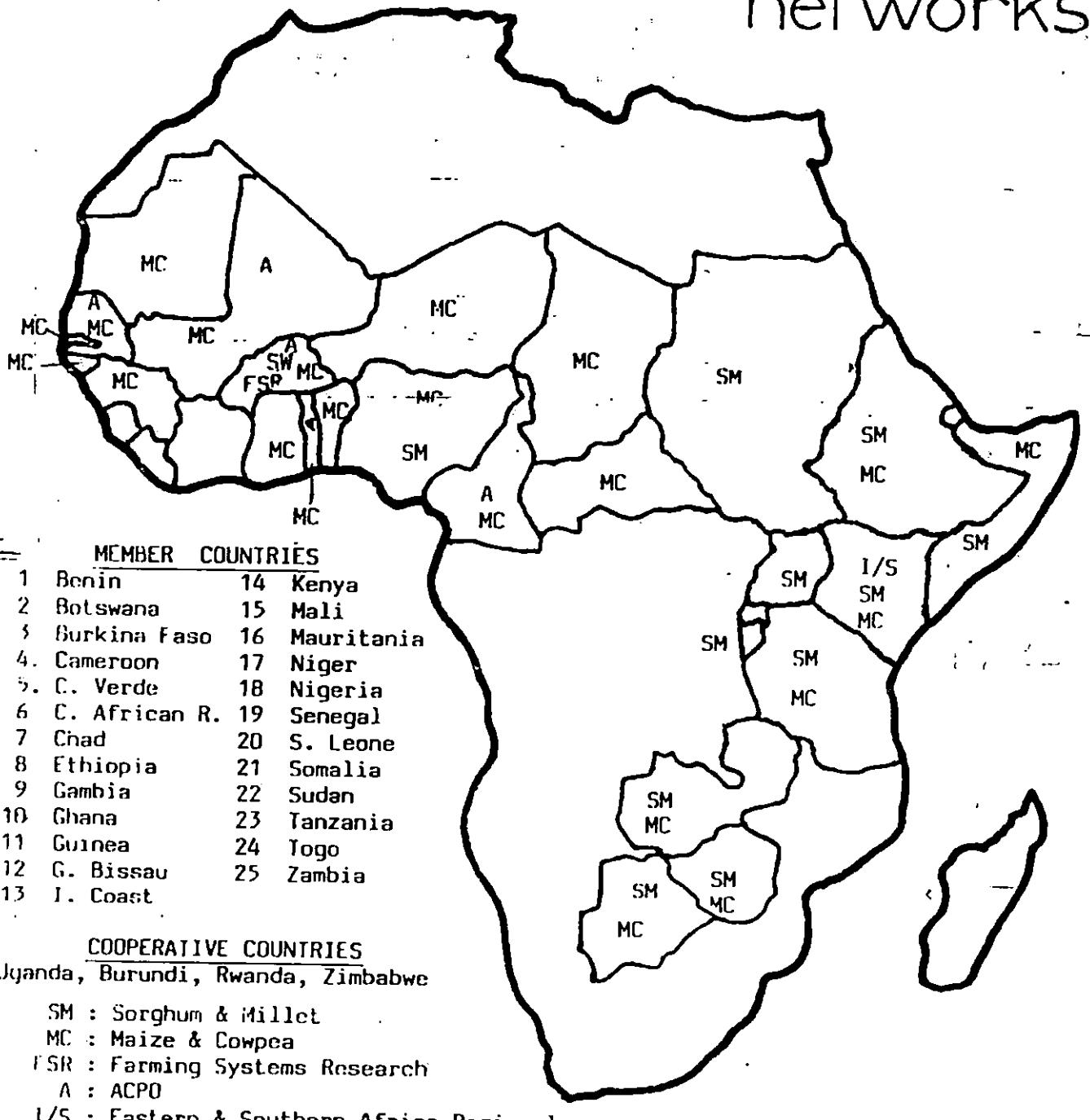
1	BENIN	14	MALI
2	BOTSWANA	15	MAURITANIA
3	CAMEROON	16	NIGER
4	C. VERDE	17	NIGERIA
5	C. AFRICAN R.	18	SENEGAL
6	CHAD	19	S. LEONE
7	ETHIOPIA	20	SOMALIA
8	GAMBIA	21	SUDAN
9	GHANA	22	TANZANIA
10	GUINEA	23	TOGO
11	G. BISSAU	24	UPPER VOLTA
12	I. COAST	25	ZAMBIA
13	KENYA		

SAFGRAD COUNTRIES

X ACPO's

0 500 1000 1500 2000 KM

SAFGRAD research networks



MEMBER COUNTRIES

1	Benin	14	Kenya
2	Botswana	15	Mali
3	Burkina Faso	16	Mauritania
4.	Cameroon	17	Niger
5.	C. Verde	18	Nigeria
6	C. African R.	19	Senegal
7	Chad	20	S. Leone
8	Ethiopia	21	Somalia
9	Gambia	22	Sudan
10	Ghana	23	Tanzania
11	Guinea	24	Togo
12	G. Bissau	25	Zambia
13	I. Coast		

COOPERATIVE COUNTRIES

Uganda, Burundi, Rwanda, Zimbabwe

SM : Sorghum & Millet
MC : Maize & Cowpea
FSR : Farming Systems Research
A : ACPO
I/S : Eastern & Southern Africa Regional Office (Sorghum & Millet

Fig.1 : CURRENT RESEARCH AND ACPO NETWORKS.

1986

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AU-SAFGRAD

AU-SAFGRAD